THE CITY OF SAN DIEGO

MANAGER'S REPORT

DATE ISSUED: September 7, 2001 REPORT NO. 01-188

ATTENTION: Public Safety & Neighborhood Services
Agenda of September 12, 2001

SUBJECT: Traffic Calming and ADA Issues

REFERENCE: None

SUMMARY

THIS IS AN INFORMATION ITEM ONLY. NO ACTION IS REQUIRED ON THE PART OF THE COMMITTEE OR THE CITY COUNCIL.

BACKGROUND

At the Council Meeting of December 12, 2000, Ms. Beverly Walker stated her concerns regarding the "Americans with Disabilities Act" (ADA) compatibility of roundabouts, residential neighborhood traffic circles, and pedestrian "scrambled" intersections. Ms. Walker also expressed concerns about City staff not bringing such projects before the Subcommittee for the Removal of Architectural Barriers (SCRAB). The Traffic Engineering Division attended the SCRAB Committee's regular meeting of June and July of this year, and presented to SCRAB a proposed "Mini Traffic Circle" design, and a proposed pedestrian "Scrambled" intersection design. Modern Roundabouts are not discussed in this report, and they will be presented at a future meeting of this committee.

DISCUSSION

Traffic Engineering contacted agencies and vendors throughout the country, in order to gather information specific to the Americans with Disabilities Act Accessibility Guidelines (ADAAG)

in relation to traffic circles and pedestrian scrambled intersections. Very limited information was obtained, as traffic calming devices are relatively new, and their impact on people with disabilities has not been thoroughly documented. Staff contacted the University of Western Michigan, where a study regarding mobility issues for people with disabilities is currently being conducted. Preliminary information from the University of Western Michigan proved very useful to traffic engineers in order to address the concerns expressed by SCRAB related to traffic calming devices. The presentations to SCRAB and communication with San Diego City College Disabled Student Programs and Services (DSPS) also provided information to develop new guidelines for the safe planning, design, and utilization of mini traffic circles and scrambled intersections by persons with disabilities.

Mini Traffic Circles

It is important to establish the difference between mini traffic circles and roundabouts: Mini traffic circles are small traffic calming devices typically about 20 feet in diameter primarily located at low volume residential streets, while roundabouts are large diameter circular areas located in high volume major streets. One of the goals of these devices is to improve safety by eliminating right angle accidents. The overall effect of mini traffic circles is a reduction in accidents at intersections and reduced speeds along residential streets. Studies suggest that vehicles traveling on streets with traffic circles maintain a uniform lower travel speed at the intersections and at mid block locations.

The technique that was previously used for the design of traffic circles included a design diameter of 20 feet. This diameter allows for a narrow travel path at intersections, while still allowing a moderately restricted access for trucks and emergency vehicles. The result of this design is that the travel path of vehicles is shifted substantially at the intersection, thus forcing vehicles to follow a circular travel path at the intersection, and thus encroaching in the crosswalk area for typical intersections. This is the primary concern from the standpoint of a disabled person. Visually impaired people would be at a higher risk of an accident under this conditions, as their ability to take evasive action is substantially lower. In order to mitigate for this condition, design engineers elected to install additional pedestrian ramps, which introduced a higher cost to the projects, and other design conflicts with fire hydrants and lamp posts.

Traffic Engineering submitted to SCRAB a new design proposal at their regular meeting in July 12. The new design is a small circle 14 feet in diameter (mini-circle) which does not cause the travel path of vehicles to be shifted into the pedestrian crossing area. We believe that mini circles can achieve the traffic calming effect of reducing speeds and accidents in residential streets, without adverse impacts on pedestrian traffic at intersections. As with most traffic calming devices, there are concerns regarding emergency vehicle access, and the circulation of buses and large trucks. All locations for new traffic calming devices are reviewed by the Fire Department to insure minimal impact to emergency response. In addition, it is the policy of the Traffic Engineering Division not to install traffic circles at intersections which are the only access to an area, thus guaranteeing alternate access for trucks and other heavy vehicles. The

SCRAB Committee members did not state any objections or concerns to the new proposed design in relation to disability issues. Traffic Engineering is committed to conduct studies after each installation of mini circles in order to determine their effectiveness in reducing speeds and accidents in local residential streets, and to assess any other adverse impacts.

Pedestrian Scrambled Intersection

Pedestrian "scrambled" intersections are signalized intersections where the pedestrians are provided with their own pedestrian crossing phase, and are allowed to cross simultaneously at all legs of the intersection and also in a diagonal path. There are no conflicting vehicular moves when the pedestrian phase is activated, and there are no conflicting pedestrian moves when the vehicular phases are in progress. Pedestrian crossing is safer because there are no vehicles allowed at the intersection with the pedestrian phases, thus eliminating the conflicts between pedestrians and vehicles, and efficiency is improved because pedestrians can cross diagonally, thus reducing their travel time through the intersection. Vehicle traffic is more efficient because there are no conflicts with pedestrian traffic when the vehicular phases are activated.

It should be noted that there are some inherent inefficiencies in this type of operation. At conventional traffic signals, pedestrian are allowed to cross at the same time with vehicular phases, thus increasing the capacity of the intersection. Scrambled intersections on the other hand, not only require a separate pedestrian phase, but also a longer one. Scrambled require longer pedestrian phases and cycles because the longest pedestrian path is diagonal from the opposite corners at an intersection. In addition, there are fewer opportunities to provide traffic signal progression along corridors because the all-way pedestrian phase blocks traffic in all directions when it is active. Thus, the scrambled operation can have significant adverse impacts in the efficiency of traffic systems as a whole. However, traffic analysis suggest that at individual locations with high pedestrian volumes and heavy right and left vehicular turns, there may be substantial safety and efficiency advantages at specific locations by using the scrambled type of operation.

Disability Concerns at Scrambled Intersections

Traffic Engineering agreed with the Gaslamp Quarter Association and the Uptown Partnership to conduct a pilot installation of scrambled intersections on 5th Avenue at Market Street and on 5th Avenue at University Avenue. Visually impaired people depend on sounds of other pedestrians, vehicles, and audible devices in order to traverse intersections, and they have concerns related to scrambled intersections because pedestrian movements are highly unusual (diagonal crossing), and there are no vehicular sounds when the all-way pedestrian phase is activated. In an effort to mitigate those concerns, staff contacted vendors of audible traffic signal devices, and discussed the scrambled operation with mobility experts from San Diego City College and the University of Western Michigan. Currently, it is the City's practice to install audible pedestrian devices in order to assist visually impaired pedestrians. The audible sound consists of a "cuckoo and chirp" alternating sound which guides pedestrians through intersections when the pedestrian phase is

activated. Our recommendation is to install a new navigational system with a voice recorded message, which provides additional information to pedestrians such as direction and street name. This new navigational system is equipped with a strengthened Anodized Aluminum casing which is highly resistant to vandalism. These new devices are in full compliance with ADA requirements, and they are provided with "tactile" directional signs and arrows, and an ambient noise level controlled "locating" tone which allows visually impaired pedestrians to find the device. This new type of audible pedestrian signal is proposed to be installed at the new scrambled intersections.

Staff presented the above findings to SCRAB at their meeting of June 14. The SCRAB Committee voted to support a pilot project for scrambled operation on 5th Avenue at Market Street and on 5th Avenue at University Avenue, with the following recommendations:

A. There should be audible devices provided that are capable of telling visually impaired pedestrian when to cross, and which direction to cross. Visually impaired pedestrian should not be directed to cross diagonally.

B. Pedestrian crossings should be fully striped on all four legs with regular stripping and with tactile markings.

C. Install stripe indications above and below pedestrian buttons as required by CA Title 24.

D. Power supply to pedestrian signals should not exceed 120 volts.

E. Provide a follow-up report to SCRAB within six months after installation regarding issues related to disabled pedestrians.

Traffic Engineering concurs with SCRAB's recommendations and will include the above items in the design of scrambled intersections. Furthermore, Traffic Engineering will conduct studies six months after the scrambled locations are installed, and a follow report will be presented to SCRAB.

CONCLUSION

Mini traffic circles can reduce accidents and vehicular speeds along residential streets, and scrambled intersections can improve pedestrian safety at signalized intersections, and the use of these devices can also improve efficiency to vehicular and pedestrian traffic. The concerns raised by the SCRAB Committee have increased the awareness of Traffic Engineers regarding pedestrian safety issues, and the result is an improved pedestrian conscious design. Traffic Engineering will continue the process of consultation with the SCRAB Committee when considering new devices in the public right-of way.

ALTERNATIVES

Do not install mini traffic circles or scrambled intersections. This is not recommended because mini traffic circles and scrambled intersections can be very useful tools to improve safety and efficiency in city streets

Respectfully submitted,

D. Cruz Gonzalez
Director, Transportation Department

Approved: George I. Loveland
Senior Deputy City Manager

LOVELAND/AH

Note: The attachments are not available in electronic format. A copy is available for review in the Office of the City Clerk.

Attachment: 1. Typical "Mini Traffic Circle" Intersection
2. Typical "Pedestrian Scrambled" Intersection